Conserving Water in agriculture

EM77:20

Farm Irrigation Systems

Any irrigation practice or irrigation structure that makes water control or irrigation scheduling easier will help stretch water supplies. "Saving water" will not provide more water to river basins but will make more water available to the farm where it was first delivered.

Where is most water lost to farms?

- Off the ends of fields into drain ditches and into streams. This water is called return flow water. It can be re-used downstream by both in-stream and out of stream users.

- Downward through the soil into ground water aquifers. This water is lost by deep percolation. It is re-used through pumping from wells or after it has returned to streams by gravity.

How can return flow water be reduced?

- By "cutting back" corrugations, furrows, and strip borders after the water has advanced 3/4 the distance across the field. This can be done by using two siphons per furrow and then reducing to one when the furrow is "cut back," or it can be done by partially closing gates or valves to strip borders.

- By collecting water running off the lower end of fields at low elevations on the farm and pumping it back to higher elevations through inexpensive pipeline systems. This water can then be re-used. It is usually cheaper, including both equipment and operating costs, than purchasing additional water from an irrigation district even when water is available.

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Open-impeller pumps which pump trash are specially built for this purpose. Installation of pump-back systems is probably the most important single improvement that can be made to an existing surface irrigation system with the least disruption of regular production programs and activities.

How can percolation losses be reduced:

- By shutting water off before it has percolated beyond the depth of the root system. This means soil probing is necessary to keep track of the "wetted front." Set changes may have to be made at odd hours of the day or night to effectively control percolation losses.

- By keeping weeds and trash out of field ditches. But don't clean the silt from them, as it provides a natural seal. A clean ditch will help water flow to fields being irrigated without excessive ponding.

- By using checks to control velocity in steep ditches. Slopes of farm ditches should be about 0.1 ft. per 100 feet or less. This encourages natural sealing, keeps the ditch relatively clean, and eliminates erosion that can result in excessive percolation losses. When slopes are greater than 0.1'/100', checks can effectively control velocity in ditches.

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